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| 10/811,375 | 03/29/2004 | Dae-sik Kim | Q74903 | 2808 |

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| EXAMINER |
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VU, PHU

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| ART UNIT | PAPER NUMBER |
| 2871 | |

DATE MAILED: 05/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/811,375

Applicant(s)

KIM ET AL.

Examiner

Phu Vu

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>2/15/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments, with respect to the rejection(s) of claim(s) 1-20 under Ouchi in view of Dewald have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ouchi in view of Lambert.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 14 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ouchi et al. US Patent No. 6493149 in view of Lambert 6288815.

Regarding claims 1, and 9-14, Ouchi discloses an image display system comprising: an illumination system, comprising: a light source (fig. 1 element 1), a color separator which separates an incident light beam according to color (fig. 1 elements 7a-7c) ; a light valve (fig. 1 element 12), which processes color beams, into which the light beam emitted from the illumination system is separated and which are scrolled, according to an input image signal, and which forms a color image; a polarization beam splitter (fig. 1 element 10), which transmits or reflects incident light beams according to polarization so that a light beam received from the illumination system advances toward

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the light valve and so that a light beam reflected by the light valve advances toward a projection lens unit; and at least one polarizing element (fig. 1 element 9a) , which is installed on at least one of a path of light traveling from the light source toward the polarization beam splitter and a path of light that is reflected by the light valve and travels toward the projection lens unit via the polarization beam splitter and which transmits only a light beam with a specific polarization.

Ouchi fails to disclose a scrolling unit comprising at least one lens cell, which converts a rotation of the lens cell into a rectilinear motion of an area of the lens cell through which light passes. Ouchi teaches a polygonal mirror type scanning function. However, Lambert teaches that the type used in Ouchi is limited only for scanning narrow light beams (see column 3 lines 63-68). Lambert teaches a spirally formed disk (see fig. 8A and 8B) scrolling unit (fig. 7B) which can comprise multiple lens cells of cylindrical type (see fig. 8A and 8B) though only one is shown (see column 11 lines 10-26) that rotates such that the lens array moves closer to or away from the rotation center to provide a scrolling function that corrects the scan nonlinearities associated with the prior art over a wide aperture (see column 5 lines 25-38). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply a spiral disk-scrolling unit with multiple cylindrical lens cells that move rectilinearly from the rotation center to provide a linear scanning function over a wide aperture.

Regarding claim 2, Ouchi teaches display system of claim 1, wherein the light valve is a reflective liquid crystal display (see claim 9).

Regarding claim 3, Ouchi teaches the image display system of claim 1, wherein the at least one polarizing element is a non-absorption polarizing element (element 10).

Regarding claim 4, Ouchi teaches the image display system of claim 3, wherein the at least one polarizing element is a polarization beam splitter (fig. 1 element 4).

Regarding claims 5 and 6, Ouchi teaches at least one polarizer element (fig. 1 element 9a) between the polarization beam splitter and the illumination system.

Regarding claim 7, Ouchi teaches the image display system of claim 1, wherein the polarizing element is a polarizer (fig. 1 element 9a) installed in the front of the polarization beam splitter and the light source.

Regarding claim 8, Ouchi teaches the illumination system further comprising a polarization conversion system, which converts a light beam emitted from the light source into a light beam with a single linear polarization (see fig. 1 elements 3, 4 and 4a).

Regarding claim 20, Ouchi teaches the color separator separates the light beam emitted from the light source into a plurality of color beams by selectively reflecting light with a specific wavelength from the light beam emitted by the light source (see fig. 1 elements 7a-7c).

Claims 15 and 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Ouchi in view of Lambert and further in view of Bierhuzen et al US Patent No. 6839095.

Ouchi and Lamber disclose all the limitations of claims 15 and 16 except first and second fly-eye lenses, installed between the scrolling unit and the light valve, each

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comprising a plurality of lens cells corresponding to the lens cell of the scrolling unit so that light beams passed through the scrolling unit are of one to one correspondence and a relay lens, installed between the second fly-eye lens and the light valve, which transmits light beams passed through the second fly-eye lens so that light beams of different colors are focused on different locations on the light valve. Bierhuizen discloses first (cov. fig. 122) and second fly-eye lenses (cov. fig. element 120), installed between the scrolling unit and the light valve, each comprising a plurality of lens cells corresponding to the lens cell of the scrolling unit so that light beams passed through the scrolling unit are of one to one correspondence and a relay lens (cov. fig. element 128), installed between the second fly-eye lens and the light valve, which transmits light beams passed through the second fly-eye lens so that light beams of different colors are focused on different locations on the light valve to increase the light transmission efficiency and to focus the light through the polarizing beam splitter (see column 4 lines 23-30). Therefore, at the time of the invention, it would have been obvious to add two fly-eye lenses and a relay lens to increase the increase light transmission efficiency and focus light toward the polarization beam splitter.

Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ouchi in view of Lambert in view of Bierhuizen and further in view of Ito et al. US Publication No. 2002/0180933.

Regarding claims 17-18, Ouchi discloses a plurality of lenses disposed in front of and behind the scrolling unit so as to control the width of a light beam incident upon the scrolling unit, however they are not cylindrical (see fig. 1 elements 6 and 5c). Ito

teaches cylindrical lenses that can be used as concave or convex lenses (see 0034).

Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use a cylindrical lens in order to gain functionality as a concave or convex lens.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ouchi in view of Lambert in view of Shahzad US Publication No. 2002/1911154.

Ouchi and disclose discloses all the limitations of claim 19, except color separator comprising a plurality of reflective dichroic filters to separate a light beam emitted from the light source according to wavelength. Shahzad discloses dichroic filters to separate unpolarized light into colored beams ([0006] and [0016]) and used in conjunction with a prepolarizer can be used to increase extinction ratio to output light of the desired polarization state ([0017]). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use dichroic filters to separate unpolarized light by wavelength to increase extinction ratio to output more light of the desired polarization state.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu Vu whose telephone number is (571)-272-1562. The examiner can normally be reached on 8AM-5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Phu Vu
Examiner
AU 2871


ANDREW SCHECHTER
PRIMARY EXAMINER